Key

Name_____ Date_____

Factoring Review: GCF, Difference of Squares, Trinomials, Guess & Check, Grouping

1. $4x^3 + 8x^2$

$4x^2(x+2)$

2. $2x^2 + 3x - 5$

$(2x+5)(x-1)$ $\quad +5x, -2x, +3x$ ✓

3. $x^2 + 8x + 12$

$(x+6)(x+2)$

4. $18y^6 - 27y^4 + 54y^2$

$9y^2(2y^4 - 3y^2 + 6)$

5. $2x^2 + 15x + 7$

$(2x+1)(x+7)$ $\quad +1x, +14x, +15x$ ✓

6. $25x^2 - 9$

$(5x+3)(5x-3)$

7. $3x^3 + 2x^2 - 15x - 10$

$x^2(3x+2) - 5(3x+2)$

$(3x+2)(x^2-5)$

8. $x^2 - 7x + 12$

$(x-3)(x-4)$ $\quad -3x, -4x, -7x$ ✓

9. $16x^2 - 121y^2$

$(4x+11y)(4x-11y)$

10. $x^3 - 2x^2 - 4x + 8$

$x^2(x-2) - 4(x-2)$

$(x-2)(x^2-4)$

$(x-2)(x+2)(x-2)$

11. $14x^7 - 28x^5$

$14x^5(x^2-2)$

12. $3x^{2m} + 7x^m - 6$

* note $x^m * x^m = x^{m+m} = x^{2m}$

$(3x^m - 2)(x^m + 3)$

13. $x^2 - 3xy - 28y^2$

$(x+4y)(x-7y)$

$+4xy$
$-7xy$
$-3xy$ ✓

14. $3x^3 - 27x$

$3x(x^2-9)$

$3x(x+3)(x-3)$

15. $3x^2 - 6x - 9$

$3(x^2-2x-3)$

$3(x+1)(x-3)$

$+1x$
$-3x$ ✓

16. $10x^3 - 45x^2 + 14x - 63$

$5x^2(2x-9) + 7(2x-9)$

$(2x-9)(5x^2+7)$

17. $15x^3 - 10x^5$

$5x^3(3-2x^2)$

18. $144x^4 - 9y^2$

$9(16x^4 - y^2)$

$9(4x^2+y)(4x^2-y)$ ← * note this is the NOT "diff of squares"

19. $5x^2 - 13x + 6$

$(5x-3)(x-2)$

$-10x$ ✓

20. $x^3 - 5x^2 - 9x + 45$

$x^2(x-5) - 9(x-5)$

$(x-5)(x^2-9)$

$(x-5)(x+3)(x-3)$

21. $2x^5 - 12x^3$

$2x^3(x^2-6)$

22. $3x^2 + 14x - 5$

$(3x-1)(x+5)$

$-1x$
$+15x$
$+14x$ ✓

23. $x^2 + 2x - 8$

$(x+4)(x-2)$

24. $16x^5 - 24x^3 + 36x^2$

$4x^2(4x^3 - 6x + 9)$

* - note $x^{2p} = x^p \cdot x^p$

25. $2x^2 - 11x + 9$

$(2x-9)(x-1)$

26. $4x^{2p} - 9$

$(2x^p + 3)(2x^p - 3)$

27. $2x^3 - 6x^2 + 5x - 15$

$2x^2(x-3) + 5(x-3)$

$(x-3)(2x^2+5)$

28. $x^2 + 12x + 27$

$(x+3)(x+9)$

29. $9x^2 - 25y^2$

$(3x+5y)(3x-5y)$

30. $x^3 + 7x^2 - 9x - 63$

$x^2(x+7) - 9(x+7)$

$(x+7)(x^2-9)$

$(x+7)(x+3)(x-3)$

* note not a difference

31. $18x^5 + 72x^9$

$18x^5(1 + 4x^4)$

32. $3x^2 - 7x + 4$

$(3x-2)(x-2)$

33. $x^2 + 6xy - 27y^2$

$(x+9y)(x-3y)$

34. $2x^3 - 18x$

$2x(x^2-9)$

$2x(x+3)(x-3)$

35. $3x^2 - 12x + 12$

$3(x^2-4x+4)$

$3(x-2)(x-2)$

36. $2x^3 + 6x^2 + 9x + 27$

$2x^2(x+3)+9(x+3)$

$(x+3)(2x^2+9)$

37. $32x^4 - 16x^2$

$16x^2(2x^2-1)$

38. $121x^2 - 49y^2$

$(11x+7y)(11x-7y)$

39. $9x^4 - 37x^2 + 4$

$(9x^2-1)(x^2-4)$

$(3x+1)(3x-1)(x+2)(x-2)$

40. $15x^3 + 6x^2 + 5x + 2$

$3x^2(5x+2)+1(5x+2)$

$(5x+2)(3x^2+1)$

Error Analysis

Given : $x^3 + 5x^2 - 4x - 20$

$x^2(x+5) - 4(x+5)$

Answer: $(x+5)(x^2-4)$

Answer is $(x+5)(x+2)(x-2)$

State the correct answer and explain where the student went wrong.

The student did not factor $x^2-4$ the difference of squares.

$9x^2 - 12x + 3$

$3(3x^2 - 4x + 1)$

Given: $9x^2 - 12x + 3$

Answer : $(9x-3)(x+1)$

Correct answer $3(3x-1)(x-1)$ $-\frac{1}{3x} = -4x$

State the correct answer and explain where the student went wrong.

The student did not factor out the GCF also the student did not check their factoring!

Given $4x^2 - 225$

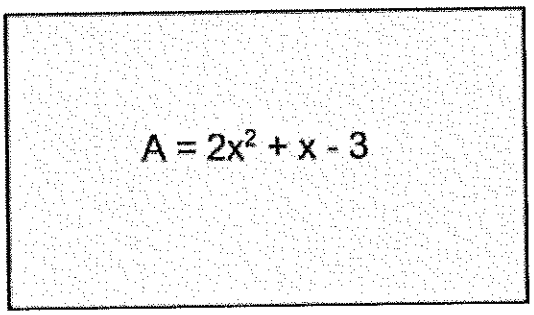
Answer: $(2x - 15)(2x - 15)$

correct answer is $(2x+15)(2x-15)$

State the correct answer and explain where the student went wrong.

The student did not correctly factor the difference of squares. Do the product of its roots.

Given this Rectangle: Find the expressions that represent the length and width.




$A = l \times w$

$A = 2x^2 + x - 3$

$A = (2x+3)(x-1)$

if $x > 1$

$\begin{cases} \text{length} = (2x+3) \\ \text{width} = (x-1) \end{cases}$

Dimensions are $(2x+3) \times (x-1)$